COMMONWEALTH OF VIRGINIA
STATE AIR POLLUTION CONTROL BOARD MEETING
November 8 and 9, 2018

SUBJECT: Minor New Source Review Permit for Atlantic Coast Pipeline LLC's Buckingham Compressor Station (BCS), Registration No. 21599 - Public Participation Report and Request for Board Action

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INTRODUCTION

Atlantic Coast Pipeline, LLC (ACP) of Richmond, VA submitted an application dated September 11, 2015 to construct and operate a new natural gas pipeline compressor station in Buckingham County, Virginia (Buckingham Compressor Station or BCS). ACP subsequently submitted several application updates based on improvements and changes to the project design. The Local Governing Body Certification Form was received on February 21, 2017. On May 25, 2018, a revised application compiling all of the updates since 2015 was received. The application was deemed complete on July 13, 2018.

BCS is to be constructed on the north side of Route 56, 5.1 miles northwest of the intersection of Route 60 and Route 56, at 5297 S. James River Highway, Wingina (Buckingham County), Virginia. Of the three compressor stations proposed to move natural gas along the Atlantic Coast Pipeline, a 556-mile long interstate pipeline system designed to transport natural gas from West Virginia through Virginia to North Carolina, BCS will be the only one located in Virginia.

Staff analysis has shown that ACP has met the requirements of the minor new source review permitting regulations at 9VAC5 Chapter 80, Part II, Article 6, and that the proposed facility, operating in accordance with the conditions of the proposed permit (Attachment A), will be in compliance with all applicable ambient air quality standards.

PERMIT APPLICATION REVIEW

ACP is proposing to construct and operate the following natural gas-fired compressor turbines:

- A 15,900 hp (129 MMBtu/hr) Solar Mars Model 100-16000 S Compressor turbine (CT-01);
- A 11,107 hp (85 MMBtu/hr) Solar Taurus Model 70-10802 S Compressor turbine (CT-02);
- A 20,500 hp (157 MMBtu/hr) Solar Titan Model 130-20502 S Compressor turbine (CT-03); and
- A 6,276 hp (55 MMBtu/hr) Solar Centaur Model 50-6200 LS Compressor turbine (CT-04).

Along with the turbines, a 6.384 MMBtu/hr natural gas-fired boiler, WH-1 (equipped with low-NOx burners), will provide building space heat only, and four 21.22 MMBtu/hr natural gas-fired ETI line heaters (LH-01 through LH-04) will provide process heat at the site. A 2,175 bhp natural gas-fired Caterpillar G3516C emergency engine will provide back-up power in the event that grid power is unavailable.

Liquid storage tanks (TK-01 through TK-03) will be used at the facility: TK-01 (2,500 gallon Accumulator Storage Tank) will store pipeline condensate collected by the station's separators and filters. TK-02 (2,000 gallon Hydrocarbon Waste Tank) will receive liquids from the compressor building and auxiliary building floor drains. TK-03 (13,000 gallon Aqueous Ammonia Storage Tank) will store ammonia to be used for the SCR control system for the compressor turbines.

The pollutants subject to Article 6 permitting from the compressor turbines units are nitrogen oxides (NOx), carbon monoxide (CO), volatile organic compounds (VOC), particulate matter having an aerodynamic diameter equal to or less than ten microns (PM10), and particulate matter having an aerodynamic diameter equal to or less than 2.5 microns (PM2.5). NOx from the units will be controlled using dry low-NOx combustion and selective catalytic reduction (SCR). CO, VOC, and formaldehyde will be controlled by oxidation catalyst. Emissions of VOC and hexane (a toxic pollutant) from the venting of natural gas are controlled by capped emergency shutdown system testing, leak detection surveys, and vent gas reduction system for the shutdown and startup venting of turbines.The total emissions from the proposed project are shown in Table 1.

Table 1. Total emissions from proposed BCS

Pollutant	**Emissions (tons/yr)**
NO_X	34.2
CO	39.2
VOC	9.8
PM10	43.2
PM2.5	43.2
Formaldehyde	4.3
Hexane	0.1

Note: Emissions of regulated toxic pollutants other than those listed above are below permitting exemption thresholds and were therefore not included in Table 1

DEPARTMENT ANALYSIS

Criteria Pollutants

Applicability of Article 6 review is evaluated on a pollutant-specific basis. A new stationary source that has uncontrolled emission rates (UERs) of a pollutant over the exemption thresholds in 9VAC5-80-1105C is subject to review for that pollutant. Pollutants exceeding the respective exemption thresholds for the proposed BCS are NOx, CO, VOC, PM10, and PM2.5.

Emissions of pollutants subject to Article 6 review are required to undergo a Best Available Control Technology (BACT) analysis and air quality analyses.

BACT

Pollutants subject to Article 6 review from a proposed facility must undergo a BACT analysis. For the proposed BCS, the pollutants subject to BACT are NOx, CO, VOC, PM10, and PM2.5.

A summary of the BACT analysis is presented in Table 2.

Table 2 – BACT for normal operation

Pollutant	BACT	Control	Compliance
Turbine - NOx	3.75 ppmvd @ 15% O_2 (3-hour avg.)	DLN burners SCR	Stack test Operational monitoring (e.g., ammonia injection, SoLoNOx mode, catalyst temperature)
Turbine - CO	2.0 ppmvd @ 15% O_2 (3-hour avg.)	Oxidation catalyst	Operational monitoring - (e.g., SoLoNOx mode, catalyst temperature)
Turbine - PM10	2.86 lb/hr, 1.92 lb/hr, 3.47 lb/hr, 1.20 lb/hr for each respective turbine	Inlet air filters	Stack test
Turbine - PM2.5	2.86 lb/hr, 1.92 lb/hr, 3.47 lb/hr, 1.20 lb/hr for each respective turbine	Inlet air filters	Stack test
Turbine – VOC	1.25 ppmvd @ 15% O_2 (3-hour avg.)	Oxidation catalyst	Operational monitoring - (e.g., SoLoNOx mode, catalyst temperature)
Emergency generators - NOx	2.0 g/hp-hr	Good combustion practices	Stack test, maintenance, hours of operation
Emergency generators - CO	4.0 g/hp-hr	Good combustion practices	Stack test, maintenance, hours of operation
Emergency generators - VOC	1.0 g/hp-hr	Good combustion practices	Stack test, maintenance, hours of operation
Emergency generators – PM10 and PM2.5	5% opacity	Good combustion practices	Stack test, maintenance, hours of operation
Fugitive Leaks – VOC	Fugitive leaks from natural gas piping components	Audio/visual/olfactory (AVO) monitoring and leak repair	recordkeeping
Venting Events - VOC	Vent gas reduction, limitation of events, reduce pressure, capped test events		Operational monitoring (e.g., piping pressure), recordkeeping

Toxic Pollutants/Hazardous Air Pollutants (HAPs)

40 CFR 63 Subpart YYYY, National Emissions Standards for HAPs from Stationary Combustion Turbines, applies to CTs located at major HAP sources. The HAP emissions from the proposed BCS do not exceed major source thresholds for HAPs (i.e., 10 tons per year of a single HAP or 25 tons per year of all HAPs combined). Accordingly, the proposed facility is not subject to the MACT standard.

Since the facility is not subject to the MACT standard, emissions of toxic pollutants were examined for applicability of the toxic pollutant standards in 9VAC5-60-300. As a result, ACP conducted an evaluation of toxic pollutants and compared proposed emission rates to the emission standards in 9VAC5-60-300. This evaluation includes a modeling analysis for two pollutants for which pre-permit emissions were above the exemption levels in 9VAC5-60-300 (formaldehyde and hexane). The modeling analysis indicates that the impacts of the two pollutants are below their applicable Significant Ambient Air Concentrations (SAACs).

Testing

The permit requires initial compliance testing for NOx, CO, PM10, PM2.5, and VOC from the turbines and emergency engine. Periodic performance testing will continue every two years for the turbines and the earlier of 36 months or 8,760 hours operation for the emergency engine. An initial test to determine proper operation of the vent gas reduction system is also required and must be repeated annually.

The permit allows the permittee to use the fuel quality characteristics in a current, valid purchase contract, tariff sheet, or transportation contract for the fuel to verify that the sulfur content of the natural gas is 1.1 grains or less of total sulfur per 100 standard cubic feet. Alternatively, the permit allows ACP to determine the sulfur content of the natural gas by annual testing.

Monitoring

For proper operation of the SCR system, the permit requires monitoring of the compressor turbine inlet air temperature, ammonia injection rate, catalyst bed inlet gas temperature, pilot operating point, turbine load, and catalyst bed differential pressure. For the oxidation catalyst system, the permit requires monitoring of catalyst bed inlet temperature and catalyst bed differential pressure. ACP must develop a monitoring plan for the turbine monitoring parameters. For the vent gas reduction system, ACP must monitor and record the seal gas pressure and compressor turbine case pressure for each compressor turbine. Records of the daily audio/visual/olfactory (AVO) and quarterly leak detection and repair (LDAR) surveys are also required, as well as corrective actions taken.

Recordkeeping

The permit requires ACP to keep records of all equipment and control device parametric monitoring results; results of fugitive leak inspections; the number of, type of, and emissions from venting events; calculations of monthly emissions from the facility; and duration of startup and shutdown for each turbine. ACP is further required by the permit to keep records of all testing results.

Reporting

ACP must provide semi-annual reports to DEQ of compliance status, including whether or not excess emissions have occurred. ACP is required by the permit to notify DEQ of commencement of construction, facility start-up, and to provide 30-day prior notice for each performance test conducted, and the results of performance tests.

Air Quality Analyses

An air quality analysis via dispersion modeling was conducted to demonstrate compliance with the NAAQS for the criteria pollutants subject to the permit requirements of Article 6: NOx, CO, VOC, PM10, and PM2.5. For the impact of the VOC emissions, a quantitative analysis was performed in accordance with current EPA guidance. Modeling was completed by ACP and submitted to the Office of Air Quality Assessments for analysis.

An air quality analysis via dispersion modeling was conducted to demonstrate compliance with the Significant Ambient Air Concentrations (SAACs) for hourly and annual formaldehyde emissions and hourly hexane emissions. Modeling was completed by ACP and submitted to the

Office of Air Quality Assessments for analysis. The modeling analysis was approved on July 13, 2018 and demonstrated compliance with the applicable NAAQSs and SAACs.

PUBLIC PARTICIPATION ACTIVITIES

Public Notice Procedure

Before an Article 6 permit that meets the criteria of 9VAC5-80-1170D can be issued, the draft permit must undergo a comment period of at least 30 days and a public hearing must be held. The Public Notice for the start of the public comment period for the Buckingham Compressor Station (BCS) appeared in the Farmville Herald on August 8, 2018, announcing a comment period from August 8 until September 11, 2018 with a public hearing conducted on September 11. In addition to the legally required notice, DEQ also published the notice in the Buckingham Beacon on August 10, 2018 to try to reach more members of the community local to the project site. The draft permit and engineering analysis were posted to the DEQ public notice website and the Piedmont Regional Office for review. DEQ also made copies available in the Buckingham County Library.

Prior to noticing the draft permit, Director Paylor determined this permit would be considered by the State Air Pollution Control Board (Board) directly. Therefore, commenters were not required to request Board consideration during the comment period.

Public Hearing

The public hearing was held at the Buckingham Middle School Cafeteria at 1184 High School Road in Buckingham County on September 11, 2018. At the hearing, 191 persons signed in as attending the hearing. Richard Langford, Chairman of the Board, was the hearing officer for the public hearing. During the public hearing, oral comments were received from 60 individuals. Many speakers summarized their comments orally and submitted written comments for the record.

Comments Received

Over the comment period more than 3,800 emails were submitted. One email included a spreadsheet containing over 1,100 individual names and associated comments. The majority of the comments received were general in nature, mostly consisting of various form letters with some slight individualization. DEQ also received more than 500 written comments via postal mail. Again, the majority of these comments are general in nature, made up of various form letters; however, they may mention topics that are also covered in more detailed and technical comments. DEQ received comments from 42 individuals that were of a detailed or technical nature commenting directly on this draft permit. DEQ has reviewed and considered all of the comments received. DEQ has grouped and summarized these comments. DEQ made all comments received available to the Board and posted the comments on DEQ's webpage dedicated to the BCS. In addition, DEQ is providing a sampling of the comments with the response to comments document for the Board for consideration.

DEQ appreciates the public participation and feedback it received regarding this draft permit. The comments are generally organized by topic; however, it should be noted that many commenters addressed multiple topics in their comments.

Changes to the Draft Permit

The following changes were made to the draft permit in response to comments received.

- The terms of the emission limits in Conditions 20 through 23 were clarified to be ppm on a dry volume basis or ppmvd.
- The term "minimum pilot mode" has been replaced with "SoLoNOx mode" with recordkeeping clarified regarding the parameters of this mode.
- The delay of equipment leak repairs was clarified to ensure that the total amount of leaking components needs to be compared to the emissions from the required shutdown.
- An inappropriate reference to a condition was deleted.

SUPPORTING DOCUMENTATION

Immediately following this agenda memo are the following documents:

A. Draft Final Permit (clean copy)
B. Draft Final Permit (with track changes)
C. Permit Engineering Analysis
D. Air Quality Analyses Review
E. Public Participation Report (including sampling of all written comments received)
F. Summary of and Response to Public Comments

RECOMMENDATION

The Board approve the proposed permit with the changes discussed above.

ATTACHMENT A
Draft Final Permit (clean copy)

ATTACHMENT B
Draft Final Permit (with track changes)

ATTACHMENT C
Permit Engineering Analysis

ATTACHMENT D
Air Quality Analyses Review

ATTACHMENT E
Public Participation Report (including sampling of all written comments received)

ATTACHMENT F
Summary of and Response to Public Comments